<u>Amendments to the Specification:</u>

Please replace the abstract with the following rewritten abstract:

A device for determining the concentration of volatile constituents of motor oil is described. <u>The device may be configured for use onboard a motor vehicle. The concentration of volatile constituents may be a function of the total base number of the oil. The arrangement may include a semiconductor gas sensor having a sensitive layer, and the sensitive layer may include metal oxides. The arrangement may include a membrane which is impermeable for oil, but is permeable for the volatile constituents. The arrangement may have a gas compartment that is separated from an oil-containing region by the membrane.</u>

Please replace the paragraph beginning on page 2, line 1, with the following rewritten paragraph:

Of the numerous parameters utilized during laboratory analyses for reliable information about the condition of the oil, the oil viscosity and the acid content or basicity of the oil are two of the most important features. Methods which allow an onboard determination of the acid content of motor oil are not known at present. The acid content of motor oil is usually characterized using the total base number (TBN) and the total acid number (TAN). The fact that the acid and basic constituents in motor oil are, primarily, not present in dissolved form, additionally hinders the characterization of this oil property. In contrast to aqueous solutions, whose acid content may easily be indicated using the pH value, the conditions are more difficult to determine for oils. As an alternative to the usual titration methods for determining the acid content of motor oil in the liquid phase, for which a sampling is inevitably necessary, when using the example device of the present invention, volatile compounds<u>,</u> such as acetaldehyde, acetone, acetic acid or benzaldehyde are detected, whose concentration is correlated in general with the total base number or the total acid number, or at least with the ageing condition of the oil. In particular, according to the present invention, a device for determining the condition of oil is provided which makes do without sampling and which may be produced easily and cost-effectively, and thus may be incorporated in a motor vehicle in operation. That the measurement of the indicated volatile compounds is indeed possible in

principle in the laboratory, e.g., with the aid of gas chromatography or mass spectroscopy, changes nothing in the fact that this is not possible for the practical use of determining the condition of oil during the running operation of a motor vehicle or a combustion engine, but rather may only be carried out using bulky and complex measuring devices. In accordance with the present invention, the volatile gas constituents of a liquid to be examined is detected, i.e., particularly a motor oil, using a compact gas sensor which, according to the present invention, is provided in particular as a semiconductor gas sensor based on tin oxide.

Please replace the paragraph beginning on page 3, line 11, with the following rewritten paragraph:

It is particularly advantageous that the device is usable onboard in a motor vehicle. Therefore, the motor oil may be monitored long-term, giving rise to the positive concomitants such as that of an oil change only when necessary and the like. It is also advantageous that the concentration of volatile constituents is a function of the total base number of the oil. Therefore, from the measurement of the concentration of the volatile constituents, it is possible on one hand to infer the total base number, and in a further step, to infer the condition of the motor oil. It is also advantageous if the device includes a semiconductor gas sensor having a sensitive layer, the sensitive layer including metal oxides. It is thereby possible to provide the semiconductor gas sensor in a particularly cost-effective manner and nevertheless in a manner that it is sufficiently sensitive for the volatile gas constituents of the motor oil to be determined. Furthermore, it is advantageous if the sensitive layer includes metal oxides of the metals Sn, W, Zn, Fe, Mo, and/or Cr with admixtures of less than 1% of metals and/or metal oxides from the group of metals Co, Ni, Mo, Re, Zn, Cr, Al, Ce, and/or Mn, and with admixtures of less than 1% of metals from the group of metals Ag, Au, Pt, and/or Pd. It is thereby possible, by a different fashioning of the sensitive layer, to either especially optimize it for different situations, or to provide a widely usable sensitive layer having a sufficient sensitivity for many measuring situations, which means a sensitive layer of this type may be produced particularly inexpensively. It is furthermore advantageous if the device has an SAW (surface acoustic waves) sensor or a BAW (bulk acoustic waves) sensor or a chemiluminescence sensor. It is thereby advantageously possible to use alternative sensor

principles for the sensor of the present invention, i.e., for the example device of the present invention. Another advantage is that the example device may have a first membrane which is impermeable for oil, but is permeable for the volatile constituents. It is thereby possible, using simple means, to employ a gas sensor according to the present invention for determining the condition of oil. Moreover, it is advantageous if the volatile constituents are acetaldehyde, acetone, acetic acid and/or benzaldehyde. This permits particularly easy detectability using the sensitive layer according to the present invention. Moreover, it is advantageous if the device includes a gas compartment which is separated from an oil-containing region by the first membrane. It is thereby possible to keep the device particularly stable over its service life, because the gas-sensitive layer is not soiled or impaired by contact with the oil. It is also advantageous that the first membrane is moistened by oil.

Please replace the paragraph beginning on page 6, line 1, with the following rewritten paragraph:

Oil reservoir 11 is provided in particular as oil pan 11 of a combustion engine. With the aid of connections (not shown) to oil pan 11, an oil circulation is indicated in Figure 1, designated by reference numeral [[12]] <u>13</u> and two arrows. Generally, the oil is circulated through oil circulation [[12]] <u>13</u> by an oil pump (not shown), oil circulation [[12]] <u>13</u> usually also having an oil filter (not shown). In oil reservoir 11, oil 10 forms in particular a liquid phase and, above the liquid phase, a region in which, according to the present invention, for example, oil squirts are provided. Device 1 of the present invention is located either, as shown in Figure 1, above the liquid phase of oil 10, or else in direct contact with the oil, that is to say, the liquid phase of oil 10 moistens first membrane 2. As already mentioned, first membrane 2 is provided as a gas-permeable layer which, however, is not permeable for oil 10. According to the present invention, first membrane 2 is provided in particular as an oil-repellent ~~Teflon~~ <u>TEFLON (polytetrafluroethylene)</u> membrane. Through it, one or more of the volatile indicator substances<u>,</u> such as acetaldehyde, acetone, acetic acid, benzaldehyde, which, as volatile constituents in the form of indicator substances, are characteristic for the ageing of the oil, is/are able to get into gas compartment 30 of device 1, where gas sensor 20, likewise disposed

in gas compartment 30, is able to measure the concentration of this/these indicator substance(s).

Please replace the paragraph beginning on page 7, line 22, with the following rewritten paragraph:

According to the present invention, gas sensor 20 may be implemented by various technologies. For reasons of cost, semiconductor gas sensors 20 are preferably used in the present invention. Such a semiconductor gas sensor 20 is shown in Figure 2. It includes a substrate 21, a second membrane 22 and a sensitive layer 25. Sensitive layer 25 interacts with indicator substances 12, which get into gas compartment 30 through first membrane 2. Sensitive layer 25 includes, in particular, powdery metal oxides which are sintered by a burning process. According to the present invention, gas sensor 20 has a heating structure 23 and an electrode structure 24. Heating structure 23 heats sensitive layer 25 to an elevated temperature of, for instance, 100 to 400 C according to the present invention. In response to the presence of the gases to be detected or the indicator substances to be detected, one electrically measurable property of sensitive layer 25 of gas sensor 20 changes. The resistance, the impedance, or the capacitance of sensitive layer 25 may be used in particular here as the electrically measurable property. These electrically measurable properties are measured via electrode structure 24. Electrode structure 24 is connected to contact structures (not shown) on semiconductor sensor 20. Electrical signals from electrode structure 24 may thus be routed to an evaluation unit, not shown in Figure 2.

Please replace the paragraph beginning on page 8, line 17, with the following rewritten paragraph:

According to the present invention, sensitive layer 25 is made of metal oxides of the metals Sn, W, Zn, Fe, Mo, or Co. In this context, sensitive layer 25 includes, in particular, admixtures of less than one percent of metals or metal oxides of the group of metals Cu, Ni, Mo, Re, Zn, Cr, Al, Ce, Mn, and further admixtures of likewise less than one percent of noble metals from the group of metals Ag, Au, Pt, or Pd. In this connection, according to the present invention, the

admixtures have, in particular, a minimum portion of 0.0001%. The base material of sensitive layer 25 and the admixtures are especially selected according to the present invention so that the signal, i.e., the electrical property to be measured, such as the change in resistance of sensitive layer 25, of the gas sensor is at a maximum.